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ABSTRACT

This guide, designed for both students and adults, is intended for individuals who feel they might be interested in establishing a recycling depot. The guide includes such pertinent information as deciding how to set up a depot, markets and transportation, preparation of materials, where to place the depot and when to operate it, publicity and education, types of containers and special equipment needed, how to get extra help, legal requirements and recycling, the keys to recycling, and how to go about closing down a recycling depot. Also included in this guide is a Recycling Handbook. Each page of this handbook describes one type of recyclable material such as glass, "tin cans," aluminum, newspapers, magazines, cardboard and ledger paper, motor oil, car bodies, and plastics. After a description of each item, the industrial processes used to recycle it and the importance of recycling the item are clarified. A presentation of the politics of recycling concludes this handbook. (BT)

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A GUIDE TO



RUNNING A RECYCLING PROJECT

Prepared by O.R.I.O.N.
Oregon Recycling Information and
Organizing Network,
an educational project of the
Oregon Environmental Council
2637 S.W. Water Avenue
Portland, Oregon 97201
1973

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INTRODUCTION

Why should we--Americans--Oregonians--recycle? The phrase "the richest nation in the world" has been used to the point where we now ask "why?" and "so what?" We import goods, use them, throw them away. It never occurred to our predecessors to conserve for the day when we would run low on resources or low on dump sites; now we realize this threat. Recycling and reuse are practices which must become second nature to us, replacing our one-time-use habits which waste both energy and material resources.

In this sense, a recycling depot--a middle-man position between the consumer and recycling industries--is a community service and an educational tool. If the depot is convenient and well-run, it will save the community money and resources now (garbage and grocery bills) and in the future (resource supply). Recycling is an educational experience for each participant in their own resource recovery, aiming to change peoples' way of thinking about household by-products from "waste" to "reusable resources."

You may find this booklet negative in tone. This is not to discourage you, but to warn you of problems to avoid, and to encourage the development of good, stable recycling centers and markets.

DECIDING TO SET UP A DEPOT

If you think you might want to set up a recycling depot, you should decide whether the project is to be a service first and money-making project second, or vice versa. Recycling is a hard way to make money and often will end up without really dedicated recyclers, thus bogging down when markets are slow. A recycling center can become a large-scale operation, often requiring heavy equipment, ample space, and trucks. Don't do it alone if possible and don't hesitate to ask for donations of time, equipment, advertising space, and so on. Accept the recycling project for what it is: an honorable and important undertaking, and one which succeeds because of people who are willing to look beyond their garbage cans and into the future.

Many recycling depots get started as club projects or as non-profit corporations. Money can be made for clubs when you have donated trucks and labor. Non-profit corporation status allows you to pay for wages and other services, but not to pay for corporation officers, stock, or dividends. They are tax exempt and sometimes tax deductible.

Commit your project to a time period, so that you will not give up and quit because of problems in your first month of operation.

The experience of many now-successful groups suggests that you start out by collecting one item, e.g. glass. Then expand to more items if and when you can. Glass usually brings in the most money for a project. The all-purpose or full-line depot is likely not to make as much money for your labor as a glass depot, but a depot which takes all recyclables is a real public service. It will also have more people using it than a limited depot. According to one such depot in Portland, "many people tell us that being able to bring everything to one place at one time, and having it so handy to home makes the difference to them." Visiting different kinds of depots to see their problems firsthand might help you decide.

MARKETS AND TRANSPORTATION

After, or in conjunction with, deciding what material(s) you want to collect, you should check into marketing if your aim is to make money. The alternative is to donate your collection to another recycling depot which would then have the task of marketing it. Some companies (especially paper companies) will provide you with containers and/or transportation.

Companies come into and go out of business; the following is a list of markets known to the Recycling Switchboard as of February 19, 1973. Before making any decisions, however, check with the company as to hours they will accept materials from the public, minimum quantities, etc., and tell them about your project. If your material is clean and well-prepared, you may receive a higher price.

Unless otherwise noted, addresses are in Portland.

GLASS:

Owens-Illinois Glass Co., 5535 N.E. 101st, 254-7331.
All container glass.

United Glass, 335-1/2 S.E. Morrison, 235-4214.
Gallon and half-gallon containers unbroken.

METALS:

Alaska Junk Co., 2750 S.W. Moody, 224-9900.
Aluminum (no cans), auto scrap (all tin, glass, cloth removed), non-ferrous metals.

American Can Co., Industrial Way, Salem.
Tin cans.

C & J Steel, 2224 N.W. 21st, 227-2224.
Clean steel scrap, at least 1/16" thick.

Calbag Metals, 2495 N.W. Nicolai, 226-3441.
Aluminum and other non-ferrous scrap, car batteries, radiators.

METALS (cont'd):

Continental Can Co., 10200 N. Lombard, 286-4421.
Steel ("tin") and bimetal (steel sides, aluminum top)
cans. Pays only non-profit groups.

Dell's Tires & Batteries, 7500 N.E. Killingsworth, 254-
6551. Car batteries. (You pay to dispose of tires.)

Eugene Salvage Yard, Eugene.
Scrap metals.

National Can Co., 2601 N.W. Lower River Road, Vancouver,
Portland telephone number: 285-7729.
Steel ("tin") cans. Pays only non-profit groups.

Reynolds Aluminum, on Sundial Rd. near Troutdale Airport,
Troutdale, 665-9171.
All types of aluminum, but cans should be kept separate.

Schnitzer Industries, 4200 N.W. Front, 224-9900.
Non-ferrous scrap metal, clean auto bodies, as-is or clean
metal appliances.

PAPER:

Arnel's Inc., 2330 S.E. Harney, 236-8540.
Clean newspaper.

Astoria: Harold Campbell, 325-4622.
Corrugated, high grades.

Baker Salvage, Albany.
Cardboard.

Bird & Son, 6350 N.W. Front, 222-1300.
Bundled newspaper (may be wet), corrugated cardboard.

Clayton Ward, 907 Front St. N.E., Salem.
Various papers.

Consolidated Fibers, 1700 N. Columbia Blvd., 285-0458.
Newspaper, IBM output, cardboard, high quality office paper.

Corvallis Disposal Co., Corvallis, 752-3496.
Corrugated cardboard.

Independent Paper Stock, 1315 N.W. Overton, 227-2811.
Newspaper, scrap paper (glossy, cereal boxes, etc.), mag-
azines, all cardboard, no wet strength.

Malarkey Roofing, 3131 N. Columbia Blvd., 285-8331.
Newspaper.

McGraw-Edison, Corvallis.
Newspaper.

Medford: Gene Kezer (near dump), 664-3732.
Corrugated.

Portland Paper Mills, 2625 S.W. Industrial, 222-6401.
 Recycled paper, newsprint, waste, plastic, foil, carbon,
 corrugated cardboard, computer output, office paper.

Portland Paper Mills, 1700 Cross St., Eugene, 688-2123.
 Recycled paper, newsprint.

Portland Paper Mills, 140 S.W. Hackland, 222-7143.
 Recycled paper.

Reynolds Valley Recycled Paper (near camp), 476-2731.
 Recycled paper.

Reynolds Valley Recycled Paper, 433 Sheridan, Roseburg, 673-7122.
 Recycled paper.

Superior Paper Mills, 2525 S.E. 11th, 226-8054.
 Recycled paper, newsprint, waste, foil, office paper.

Western Paper Mills, 2000 N. Columbia Way, Vancouver,
 652-1456 (recycling phone no. 222-2341).
 Recycled paper, newsprint, waste, foil, office paper.

Willamette Valley Papers, Eugene.
 Various papers.

Other people may be found in your local "Yellow Pages,"
 from the Chamber of Commerce, etc. Find markets close to your
 depot, since transportation to the market(s) will probably be
 your biggest cost. Unless you have proper heavy duty truck and
 handling equipment, the hauling (and thus the money) isn't worth
 the trouble and effort.

Small business: Write to the city markets in major cities,
 to see if they have trucks passing through your area which could
 service your depot regularly and still (if you wish) pay you
 something. Other recyclers in your general area may have trucks
 which could do the same thing. The organizers of Oregon Recy-
 clers are Eco-Alliance (Memorial Union, Oregon State University,
 Corvallis 27131), S.R.I.N.G. Recycling, Inc. (P.O. Box 885,
 Eugene, 746-3023), Portland Recycling Team (1207 S.W. Montgomery,
 Portland, 328-2369) and Oregon Recycling Information and Organi-
 zing Network (2617 S.W. Water Ave., Portland, 222-3952).
 They can tell you if there's any way Oregon Recyclers can help
 you get off the ground.

Another method of transportation is to enlist the help of
 the local National Guard (or other military installation). They
 like to carry on public service projects on drill weekends
 (usually one weekend per month, scheduled far in advance).
 Contact the local unit commander for more information.

PREPARING MATERIALS

This will save yourself and your group an immense amount of time if you will teach your customers how to prepare their own recyclables and insist that they do it.

The charts on the following two pages describe common recyclable items, approximate market value, volume, how they should be prepared by the customer, and safety reminders.

WHEN AND WHERE

All kinds of places can become recycling depots: private homes, schools, vacant lots, parking lots, churches, fire stations, service stations, donated store space, vacant buildings, fairgrounds, old military installations, warehouse loading docks. The important thing is that it be convenient to those who will use it, and convenient for loading and unloading of equipment and recyclables. You will need a dry covered area for newspapers and other paper, and a fence and lock (or be completely indoors) to keep out vandals and accident-prone children.

The home garage or patio is a common recycling center. You can tell people in your initial advertising and with a sign, to leave the material beside the garage if you are not home. But in this, as well as in all "permanent" depots, possible problems are: people coming at all hours (unless you restrict them), making an unsightly mess of your yard, leaving unseparated or unwanted items. Thorough education of the people who use your depot can help to avoid each of this.

An alternative to a permanent depot is a repeating depot, which might be open, for instance, the last Sunday of each month from 9 a.m. to 3 p.m. There is less mess to contend with at such a temporary depot (since all the material is carted away right after the 3 p.m. closing time), and transportation might be arranged with one of the Oregon Recyclers. This can also work with collection of recyclable paper. You can get a 40-foot van from some paper companies; for example, have it placed in a store's parking lot and leave it there for several weeks to collect newspapers. The store will usually help you out with publicity. The paper company hauls the van away when full.

It is often easier to get volunteer help when you run a repeating depot; and combined with the advantage of not having the potential hazard and eyesore of the 24-hour depot, this might be a good way to start. It works well in home, school, or public parking lot situations.

If you live in an area where people take their own garbage to the dump, you might set up a depot near the dump.

PICK-UP-ONLY SERVICE: If you have the use of a pick-up (or larger) truck, there are advantages to this system. You are essentially open only the hours you are picking up. You can

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HOW TO HANDLE COMMON RECYCLABLES

Material, what it is	approximate market value	approximate net weight	how to prepare	safety considerations
Glass: any container (no plate or Pyrex glass)	\$20/ton	A 55-gal barrel full weighs: 100# uncrushed 400# hand broken 540-700# by glass crusher. A 5-gal paint can full weighs: 10-50#.	Remove metal caps, rings. Rinse out containers. Sort by color: clear, green, brown. May be broken or whole. Paper labels may be left on.	Use caution in breaking glass. Care in lifting heavy barrels. Food particles cause odor, nuisance.
Tin cans: steel cans ("tin") or bimetal cans (steel + aluminum). Sort out 5¢ Oregon deposit cans.	\$10-\$20/ton only to non-profit groups at present.	55-gal barrel holds 100#. 4x4x8' container holds 700-1600#.	Clean. Remove paper label. Crush (may be done by removing ends, step on cylinder).	Watch sharp edges. Care in lifting heavy barrels. Food particles cause odor, nuisance.
Aluminum: keep cans separate from other aluminum. Sort out 5¢ Oregon deposit cans.	\$200/ton	Handled in large plastic bags holding 35#. 55-gal barrel holds 35#.	Clean. Crush.	Food particles cause odor, nuisance.
Newspaper: newsprint. No bound books, not crumpled.	\$3-\$17/ton	1' stack tightly bundled weighs 35#. Van loaded 39x7x 6' holds 39,000 - 44,000#. 12x6x4' truck bed full weighs 3 tons.	Bundle with twine or put in large grocery sacks.	Caution in lifting heavy containers.

HOW TO HANDLE COMMON RECYCLABLES

Material, what it is	approximate market value	approximate net weight	how to prepare	safety considerations
Mixed scrap paper: may include office paper, chipboard, junk mail, envelopes, magazines*, phone books*, kraft paper*. No carbon paper, newspaper, staples, wax or plastic coating.	\$5/ton	5x5x6' bin weighs 1000#. 12x6x7' truck bed full weighs 2 tons.	In any container.	Caution in lifting heavy containers.
Magazines*: no catalogs or phone books*.	\$5/ton		Bundled.	Caution in lifting heavy containers.
Kraft paper: brown paper (such as grocery sacks, wrapping paper) and corrugated cardboard.	\$5-\$17/ton	3x3x6' crib full weighs 100#. 12x7x6' truck bed full of unbundled corrugated =2000#. baling.	Tear down boxes and keep flat. Some companies require machine baling.	Caution in lifting heavy containers.
High quality office paper: may include mixed typing, notebook, binder, mimeo, ditto paper, envelopes. No wax or plastic coating, carbons, cellophane, glossy magazine paper, newspaper.	\$25-\$40/ton	12x7x6' truck bed full weighs 2 tons.	Make arrangements with buyer.	Caution in lifting heavy containers.
IBM cards and printout paper.	\$25-\$75/ton		Make arrangements with buyer.	Caution in lifting heavy containers.

* Some companies ask that magazines, kraft paper, phone books be separate, and others will accept these papers combined as mixed scrap. So check with the buyer for their specifications.

Here is a sample radio public service announcement used by the Recycling Switchboard:

"Each day in Portland we throw away two million pounds of trash and garbage. This tremendous waste of our labor and natural resources is like throwing money away. Call the Recycling Switchboard, 222-3952, and find out how you can recycle, and save your environment."

It is our experience that radio announcers prefer to read the spots themselves rather than play a taped recording. Television, of course, requires a filmed, videotaped, or picture slide spot. Public service announcements are 10, 20, 30, or 60 seconds long, and they are broadcast free of charge.

If the depot is going to be connected with a school, informational leaflets can be sent home with the students along with questionnaires asking for volunteers to work on publicity, hauling the goods, working at the collection site.

CONTAINERS

Depending on the size of your operation, the following sizes of containers can be used to store and transport materials:

Glass	5-, 30-, or 55-gallon steel drums (fiber barrels disintegrate after about 10 uses).
Tin cans	55-gallon drums, strong cardboard boxes, or wooden boxes.
Aluminum	large plastic sacks (Reynolds Aluminum will dump the cans into a plastic sack if you take them there in anything else).
Newspaper	bundles, or van, or covered wooden drop box.

A 55-gallon metal drum empty weighs anywhere from 15 to 90 pounds. Fiber barrels weigh about 5 pounds.

55-gallon steel drums can be obtained free or for a small charge from established recycling depots or companies which discard them. Suggestions:

- Max Olshen, 774-8912, small charge.
- Owens-Illinois Glass, free when available.
- fuel oil companies, chemical companies, janitorial companies, construction companies.

5-gallon paint cans can be obtained from commercial painters.

Fiber barrels can be obtained from bakeries (shipping clerk), bakery thrift stores, chemical companies.

Larger recycling operations may want to go to roll-on roll-off containers that sit at the depot until full, then roll onto the transporting truck.

Oregon Recyclers is trying to get a 4x4x8' tall hand-built container into common use for storing and transporting tin cans. It is made from 1/2" exterior plywood, supported by steel bands. The boxes are built with a trap door at the bottom of one side, to let the material out. They can hold 700-1600 lbs of cans. Contact Eco-Alliance or B.R.I.N.G. for more information.

SPECIAL EQUIPMENT FOR THE DEPOT

Following are suggested tools that you will need in handling different types of recyclables.

General	first aid kit brooms, dustpans, gloves handtruck for moving full barrels recycling information handouts pallets and forklifts for moving large amounts of material, if necessary pick-up truck or larger vehicle for transporting
Glass	for safe glass breaking, a wooden barrel cover with hole in the center. This works like a butter churn, with a sledge hammer. nippers or hook-type can opener to remove metal rings from bottle necks long-handled sledges to crush glass and cans safety goggles (from high school science teachers?) gloves
Cans	can openers long-handled sledges to crush cans and glass
Newspaper	twine and scissors for bundling newspaper

EXTRA HELP

Your appeals through public service announcements and neighborhood canvassing may have brought in volunteers.

Local Boy Scout troops or similar organizations might work on a service project which would serve to spread the word of your collection to surrounding school attendance areas. The experience of one Portland depot is: "One of our avid supporters is a 5th and 6th grade Camp Fire Girls leader. Her group decided to put collection boxes in each of our (grade) school rooms, educate the students and teachers as to what was "scrap paper" and once every two weeks the girls and their mothers gathered all the scrap and took it directly for sale or gave it to our collection."

Chambers of Commerce, Kiwanis, and other local service clubs might donate space and labor.

LEGAL REQUIREMENTS AND RECYCLING

In starting a recycling depot certain legal considerations should be taken, just like with any other business. Recycling depots may fall under regulations covering solid waste management. Before you start to operate a depot you should check with local officials to see:

1. if you need a license and/or zoning variance to run a depot.
2. if you are in compliance with fire, safety, health, and nuisance abatement ordinances.
3. if you pick up materials, are you infringing on a collection franchise? However, you should be able to reach an agreement with your local collector on this point.

Do not overlook these simple legal requirements. Many a recycler has had his depot closed down because he failed to attempt to comply with local ordinances.

On the other hand, don't be discouraged with the seemingly unending requirements. Many types of organizations--especially civic, nonprofit groups--are exempt from some requirements, and a little investigation will often prove that many others don't apply to your special case.

Setting up a depot in a private home is usually no problem if the site does not become a public nuisance. Setting up in public places (e.g. store parking lot) outside a city's limits usually presents no problem either. You might be required to have a metal rather than wooden building if storing newspaper inside a city's limits. There may also be ordinances regulating your use of signs, etc., which you should check.

If you are setting up in an abandoned gas station, for instance, and have to get a zoning permit, your fate depends on the local planning commission and public support. Your operation might be classed as a junk and salvage yard which would prevent you from moving into a residential neighborhood. This matter has come up in Portland, and our arguments in favor of having depots IN residential areas have been:

1. The recycling center is unlike a junk or salvage yard in several ways:
 - a. it is a public service, not a retail or wholesale business.
 - b. it is a place through which recyclable materials move, where they remain long enough to be sorted for quality and occasionally bundled or crushed.
 - c. the "treating, storing, and processing" of materials is minimal compared to that done by a junkyard, or some other similar operation such as the waste paper broker or the glass manufacturer which buys materials collected and sorted by the recycling center.
2. A recycling center, because it is a community service,

must be convenient to the people who use it and thus, like the self-service laundry or grocery store, located in a residential area, not in an industrial zone. The recycling center belongs in the community because it serves the household and provides it with a convenient and meaningful alternative to the garbage can.

If your region has a garbage franchise, the best policy is to deal directly with all parties concerned and let them know all that your recycling project is trying to do. Encourage them to help improve the resource recovery system within their community. Let them feel that recycling is in their best interest.

KEYS TO SUCCESS

We would like to relate a portion of the suggestions sent to us for this booklet by Mrs. Shirley Coffin, who originated and runs the West Tualatin View recycling project. The depot operates one day per month for 4 hours at a grade school west of Portland. The material is donated to Portland Recycling Team, which picks it up the same day.

"Factors I consider keys to our success"

1. Informed personnel: need to know as much as possible about recycling; kinds of materials, how to prepare, where and what buyers, state of the art in the metropolitan area, etc. I but I talked to every manager of paper, glass, can, and metal company in Portland that summer and fall of 1971, discussing their practices, how to prepare, hours and prices, philosophies of recycling, etc.
2. Dedicated physical labor: My husband provided the leadership on this; our project would never have made it without his hassling of the cans and drums and overseeing the volunteer labor on collection day, particularly the dangerous glass-breaking. Many men and women and student volunteers really worked HARD on collection day, and it must be understood that this is a real part of the job: the willingness to give several hours of really tough labor. We have never had much trouble getting plenty of volunteers. People seem to find it fun or satisfying or something, and my husband and I have been at every collection we've had to keep the continuity intact.
3. A central, convenient collection site, and reasonably convenient hours: The school grounds has a covered drive-through breezeway for bad weather. This year we collect from 10 a.m. to 2 p.m., and this is agreed by all to be much more convenient (than from 9 a.m. to noon). We collect the first Saturday of each month, and this is now well established in everyone's mind. Our school grounds are very centrally located, making it convenient for most of the area's residents.
4. A place to store the collection barrels and other equipment needed. We have a large lot and plenty of room to store these things, plus the willingness to do so, even though we look like a depot most of the time. We own this old covered trailer which my

husband fills with the barrels and as much else as he can get into it. Quite often someone will ask if they can bring their own recyclables over to our place early, as they are going to be out of town that day or something, and so we nearly always have some stuff already in the barrels on collection day.

5. A philosophy that recycling MUST be done, and it is not a question whether you can use it as a money-raising project or not. If that is a side-effect, so be it. But the important point is that we make it as convenient as possible to encourage recycling; get the habits established by householders, then worry later about the money-making. It is our view that unless you have proper heavy-duty truck and handling equipment, the hauling and thus the money isn't worth the tremendous effort.

6. A firm policy of insisting on materials being prepared properly. We accepted less than the best prepared goods last year to begin with, and especially the cans were a headache. Slowly we would get less and less bad stuff, for we were there to catch each carload, and educate the householder on the spot as to how to improve. If possible, we asked the person to stay there right then and help us clean up his materials. Repeated offenders were sent home with their stuff. Some got mad and probably were lost to the recycling cause, but it is my feeling that we are not going to become the local, once-a-month garbage dump, as so many 24-hour depots DO become. Most of the people were quite willing to improve their preparation, and we printed and handed out several times during the year a list of how to prepare things. We always ask anyone who brings untied newspapers to stay long enough to tie them themselves, and have plenty of twine and scissors there.

There is nothing quite as eye-opening as being a volunteer at such a collection to ring home the huge problem we have in the solid waste field in this country....to see what tremendous amount of material is being thrown away....in other words purchased by households, but not being reused or returned.

ENDING A RECYCLING PROJECT

Some thoughtful things you might do:

- * Tell ORION and the Recycling Switchboard.
- * Try to find some group to take over.
- * Tell people at the depot site where the nearest depot is, leave a sign for pick-up service, give the Recycling Switchboard phone number or number of another pick-up project.
- * Remember that people come to depend on you. Expect things to be left long after the project ends and check the place periodically.

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YOUR FURTHER QUESTIONS MAY BE ANSWERED BY:

Portland Recycling Team
1207 S.W. Montgomery
Portland, Oregon 97201
228-6760

Eco-Alliance Recycling
c/o Memorial Union
Oregon State University
Corvallis, Oregon 97331
754-2101

B.R.I.N.G. Recycling, Inc.
P.O. Box 885
Eugene, Oregon
746-3023

Oregon Recycling Information & Organizing Network (ORION)
c/o Oregon Environmental Council
2637 S.W. Water Ave.
Portland, Oregon 97201
222-3952

ABOUT ORION:

Oregon Recycling Information and Organizing Network is a federally funded (Office of Environmental Education, Department of Health, Education, and Welfare) educational project of the Oregon Environmental Council through June of 1973. We are hoping for further funding so that we can continue to operate the Recycling Switchboard; spread information about recycling to government, industry, and the public; and to try to get recycling incorporated into the American way of life.

Our resources are available to anyone who needs them. Our publications include the "ORION Bulletin," a bi-monthly newsletter about recycling which concerns mainly the Portland area. In the future we hope to be able to serve the rest of the state in as great detail as we serve the Portland area now.

Other printed materials available:

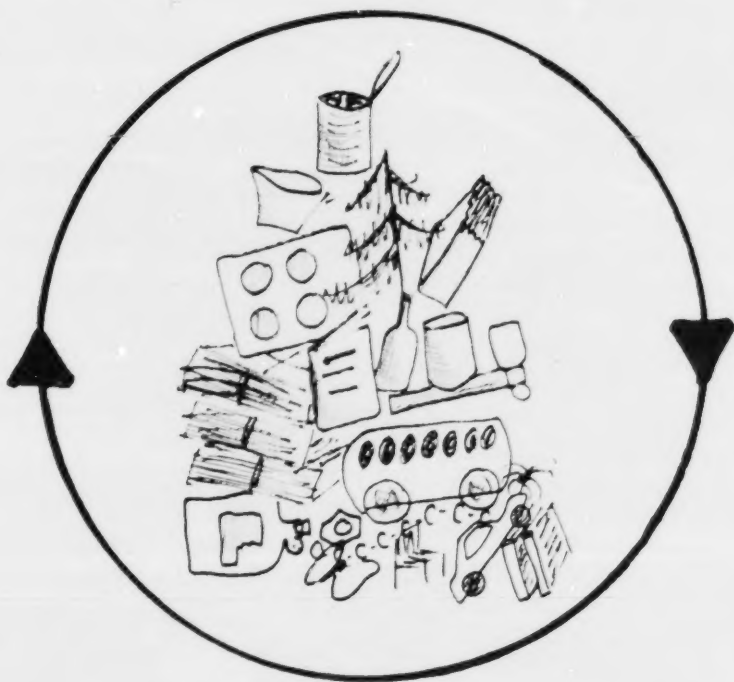
"There's No Such Thing as Garbage" 1 page

"Recycling Handbook" 16 pages

"RECYCLE! Some recycling projects" 1 page (updated periodically)

* Please send your comments on this booklet to ORION at the *
* above address. *

recycling handbook



Prepared by O.R.I.O.N.
Oregon Recycling Information and Organizing Network
an educational project of the
Oregon Environmental Council
2637 S.W. Water Avenue
Portland, Oregon 97201
Illustrations by Poo Studios

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Our lives are everywhere shaped by the circle. The invention of the wheel, the voyages of Columbus and discoveries of Galileo, the motions of the heavenly bodies and minute atoms, our calendars and clocks, electricity and television, are all rooted in the cyclical nature of time and space.

Today we begin to understand what we could have known all along, that the Earth has always recycled. Everything alive today, including ourselves, has been built by and from the things that have lived before us. In this system there is no waste, no trash, no discards.

Recycling is not a new idea; instead it is the oldest idea which at last we are bringing to our industry and technology. If the world were flat and resources endless, we could afford to throw our trash off the edge. But the world is round and resources limited.



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RECYCLING INFORMATION OFFICE
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Portland, OR 97205
RECYCLING SWITCHBOARD: 229-5559

Each page in this booklet describes one kind of recyclable (in most cases) material. You will find a description of the item, what processes are used by industry to recycle it, and why it is important to recycle the item.

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Revised edition, 1973

RECYCLING SWITCHBOARD 222-3952
for the addresses of nearby recycling depots,
drives, drop boxes, and industries.

Additional copies of "Recycling Handbook" are available. For those who are able, we would appreciate a donation of up to 8¢ per booklet, which is our preparation cost, plus the cost of shipping them to you.

Items may be reprinted without permission;
credit would be appreciated.

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glass

WHAT: Any glass container--with all metal caps and rings removed (the metal melts into the glass making it unusable).

HOW IS GLASS RECYCLED? Reusable bottles are returned to the bottler--there, labels are removed, the glass is sterilized, and the bottles are re-filled. At Owens-Illinois, non-reusable containers are crushed, melted in large, very hot furnaces, and molded into a variety of new bottles and jars.

IS GLASS RECYCLING EFFECTIVE? Returnable, reusable bottles, being heavier and more sturdy than non-reusables, can be filled up to 40 times before they reach a glass recycling center or are discarded. Owens-Illinois in Portland produces 10,000 tons of glass containers each month. Thus, each Owens-Illinois bottle currently is composed of an average of 5% recycled glass; up to 25% recycled glass may be used in new containers at the Owens-Illinois plant. The sand for glass is mined in Lone, California.



tin cans

WHAT: There are two varieties: The typical food can is steel with tin plating and an enamel coating; it has a welded or soldered side seam and ends which can be removed. The bi-metal can, often used for soft drinks, has steel, seamed sides but indented, non-removable aluminum ends. Both types of cans are recycled as "tin cans."

HOW ARE TIN CANS RECYCLED? A rarely used method involves tin and steel recovery--the cans are first re-blended, then sold as scrap metal. In the second, more common method, the cans are shredded and used in a process for refining low-grade copper ore from pit mines. After use in this process, the cans are then discarded as fill in strip mines.



IS CAN RECYCLING EFFECTIVE? The cynics among us consider can recycling as it is most commonly practiced to be at best a publicity stunt of the can industry and at worst encouragement of bad mining practices. The scarce resource in cans is the tin (40% of the tin used in the U.S. goes into cans) and little is recovered for recycling. We encourage you to save and recycle tin cans. At the same time, pressure the can industry to genuinely recycle their product by choosing other containers over cans whenever you have an alternative.

aluminum

WHAT: All-aluminum cans are molded, without side seams. They are soft with a rounded base and indented top. Any other all-aluminum items, such as TV dinner and foil pie plates, foil, and lawn furniture are also recyclable. Permanent-use aluminum (such as lawn furniture, molding, etc.) should be kept separate from cans and foils because they are composed of a different alloy.

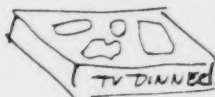


HOW IS ALUMINUM RECYCLED? Aluminum is easily recycled by melting down the article and re-molding.

WHY IS RECYCLING ALUMINUM SO IMPORTANT? Although aluminum is made from bauxite, a non-renewable resource, it is aluminum's demand on energy production that makes recycling it so vital. The conversion of 4 tons of bauxite into 1 ton of aluminum uses 16,000 kilowatt-hours of electricity. Only 127 kWh are needed to produce 1 ton of aluminum from the recycled metal. Here in the Pacific Northwest, where electricity is cheap, aluminum producers use 40% of the power sold by Bonneville Power Administration. It is said that one aluminum plant uses the same amount of electricity in a year as does the entire city of Portland. ORION recommends that you avoid buying disposable aluminum items.



FOIL



REUSE, RECYCLE,
OR
DON'T BUY!

newspaper

WHAT: Any newsprint, but no phone books or other bound newspapers; no crumpled paper.

HOW IS NEWS PAPER RECYCLED? There are many uses for old newsprint--but there are few American companies which produce new newsprint from old newspapers. Much of the old newspaper bought by Oregon paper brokers is exported to Asia where pulpwood is scarce and recycling is essential. In Oregon, newspaper is made into roofing materials, molded paper containers, packing material, fiber pipes, fire logs, and building materials.

WHAT IS THE ENVIRONMENTAL IMPACT OF RECYCLING NEWSPAPER? Newspaper is often the large part of waste paper from an average household. The Oregonian and Oregon Journal alone consume about 1,156 tons of newsprint every week; in all of Oregon 1,650 tons of newsprint per week is consumed. In Portland there are at least seven markets for newspaper, but several of these markets buy only 7 or 8 tons per day. The demand for used newspaper fluctuates, the price varying from \$4 to \$14 per ton. If recycling can establish a large and stable source of old newspaper, a newsprint recycling plant could survive in this area.



magazines

WHAT: Do not include cellophane, newsprint, wax- or plastic-coated paper.



HOW ARE MAGAZINES RECYCLED? The first way to recycle magazines is to share them--with neighbors, friends, nursing home and hospital patients, schools, waiting rooms. Since magazine paper usually contains coatings and fillers to make it slick and easy to read and because magazines are bulky, recycling presents problems. However, in Oregon, magazines are sold for making high quality paper, molded paper containers (egg cartons, for example), chipboard, and roofing materials.

WHAT IS THE PROSPECT FOR MAGAZINE RECYCLING? The market is just opening and in Portland at least two companies accept the material. Although only a few magazines use recycled paper in their printing, more and more are considering it--encourage them.

kraft paper & cardboard

WHAT: Brown paper (such as grocery sacks, wrapping paper) and corrugated cardboard (this has two layers of heavy cardboard with a ribbed section in between and is common for heavy cartons).

HOW IS KRAFT PAPER RECYCLED? Unlike most other waste papers, kraft paper and cardboard is recycled back into paper products of the same material.

HOW CAN RECYCLING KRAFT PAPER AND CARDBOARD AFFECT THE ENVIRONMENT? Kraft papers make up a large percentage of the paper produced for disposable packaging in the United States, but little is currently recycled. Their weight and bulk make them a solid waste problem as well. We encourage you to begin recycling kraft papers because they are locally recycled and are simple to separate from other papers.

CHIPBOARD (PAPERBOARD) is another kind of cardboard which is also easy to recycle back into its original form. It is the kind of thin, gray-colored cardboard used for paper rolls, food boxes, tablet backings, and many common boxes. Be sure to keep it separate from kraft paper as it is of a lower grade. Tear it down and bundle, box or bag it. Along with kraft papers, chipboard makes up more than 50% of the paper produced in the U.S.



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ledger paper

WHAT: Typing, mimeo, notebook or binder, ditto and writing paper. Do not include plastic or wax coating, carbons, cellophane, newspaper or glossy magazine paper. Paper must be bleachable--a few drops of laundry bleach should whiten the paper; if the paper yellows upon application of bleach, it is not acceptable. Keep flat and uncrumpled.

HOW IS LEDGER PAPER RECYCLED? It is first graded, sorted, and baled by the paper broker. At the recycling plant, it is then shredded, re-pulped, and de-inked (ink, fillers, dyes, etc., are chemically removed). The waste paper may then be introduced into the normal paper-making processes, for the production of bond, tissues, wrapping paper, and fine paper. Ledger of mixed grades is used for roofing materials and chipboard.

HOW CAN RECYCLING LEDGER PAPER AFFECT THE ENVIRONMENT? Paper is read once, then thrown away. A tree can be appreciated for hundreds of years. Waste paper is a weighty garbage problem--in the Portland metropolitan area alone, we dump 900 tons of paper every day which, if recycled, would be worth from \$2 to \$70 per ton! To increase the demand for waste ledger paper, buy recycled paper and to increase the supply of recycled paper, collect and sort the used paper in your home and office.



motor oil

WHAT: Drained oil, in any container or barrel.

HOW IS MOTOR OIL RECYCLED? Impurities accumulating in motor oil are moisture, dirt, gasolines, solvent, sludge; these are removed in processes involving filtering, heat, and acid. The remaining oils are then distilled and separated.

Because it must be labeled "re-refined," there is a certain public aversion to buying used oil. However, the price is one-half to one-third that of new oil, and it is as good as or better than new oil.



HOW DOES RECYCLING OIL AFFECT THE ENVIRONMENT?

Oil re-refiners perform a dual service to society: (1) the re-use of oil helps relieve the strain on our dwindling oil reserves, and (2) the re-refining of waste oil keeps it from being dumped in the sewers, on the land, or in our rivers.

car bodies

WHAT: This means just the bodies, and in some cases, parts of the body (not car parts); a few scrap metal dealers specify that the bodies must be delivered "stripped down," with all glass, plastic, fabric, rubber removed from the steel.

HOW ARE CAR BODIES RECYCLED? Cars are crushed and shredded, contaminants removed, and then recycled back into steel for reinforcing bars and girders for buildings and bridges. The 1% copper content of a car makes the resulting metal unsuitable for recycling back into car bodies.

WHAT IS THE IMPACT OF RECYCLING CAR BODIES? The greatest environmental impact of sending old cars to the steel refinery is visual--abandoned cars are grim and symbolic reminders of our environmental carelessness. Even now, only the ferrous (iron) metal in cars is being recycled, with the non-ferrous scarcer metals usually discarded (approximately 200 pounds in a 3,000 lb. car). However, note that car radiators, batteries, generators, and many other parts can be salvaged for repair and metal recycling.



plastics

WHAT: Plastics fall into two categories according to their use:

1. Disposable packaging such as plastic bags, bottles, wrapping.
2. Permanent articles such as furniture, roofing, pipe.

The disposable items are our present target for recycling. Common types of both disposable and "permanent" plastics are: polyethylene, propylene, polystyrene, polyvinyl chloride (PVC), teflon, vinyl, acetate, nylon, plexiglass, polyurethane, polyesters.

CAN PLASTICS BE RECYCLED? The only way that plastic disposables can currently be recycled in Oregon is by reusing them--refill containers, use them for arts and crafts projects. Occasionally plastic containers are returnable (gallon milk bottles, for instance).

Plastics are organic (being made from petroleum products), but they don't decompose--at the landfill or in a compost pile--because of their peculiar molecular structure. Many of them burn instead of melt when heated and therefore cannot be molded into new containers. Current Food & Drug Administration regulations do not permit the manufacture of food containers from post-consumer waste.

Efficient incineration or pyrolysis are the most practical methods of disposal at this time, except for polyvinyl chlorides (one of their combustion products--hydrochloric acid--corrodes incinerators). However, we must consider what effects the rapidly growing use of plastics has on our natural resources. The plastics industry in 1967 was growing at a rate of 20% per year, and in the U.S. polyethylene was our most heavily used plastic, followed by polyvinyl chloride. The raw materials for plastics come from petroleum and were once waste products of that industry. But now the future of today's plastics is no more certain than the supply of fossil fuel.

Until the "formidable technical barriers" to plastics recycling are overcome, we would recommend caution in accumulating more plastic packaging than you can re-use yourself.

composting

Kitchen garbage, leaf trimmings, and other domestic organic wastes surprise about 80% of our municipal solid waste workers. Such wastes cost us money. Not only must we pay to have them hauled away to the dump, but we pay for them originally as groceries, or as seeds, plants, fertilizers, and water bills.

In fields and forests, organic wastes are recycled and reused through natural processes of decomposition. Domestic garbage and trimmings can be recycled the same way in your own back yard through composting.

Trainers garden and lawn soil is alive with micro-organisms such as molds, bacteria, worms, and insects. These organisms form an ecological community which is responsible for the decomposition of organic wastes. The decomposition can be hastened by the proper mixing and arrangement of the wastes into a compost pile.

The simplest way to compost is to mix organic garbage and lawn trimmings into a pile in an unused corner of the yard or garden. Additional wastes are mixed in as they become available. This method requires two to six months for complete decomposition. The pile may be made more attractive by placing it in a slat bin, barrel, or other aerated enclosure, and covering to prevent overwatering. The process may be speeded up by shredding or grinding the organic materials and mixing them with hay, bloodmeal, manure, or other sources of organic nitrogen. (One should use extreme caution when using a rotary lawn mower or other power shredder to grind materials. The powerful whirling blades can throw objects or inflict a serious injury.) The pile should be turned and mixed every week or so to ensure even decomposition. One to two months should be sufficient time. The resulting compost can be used as mulch around shrubs and trees, or worked into the garden to improve the soil.

A concise booklet explaining domestic composting in more detail is "Ecology of Compost." It is available for 10¢ from The Office of Public Service and Continuing Education, State University of New York, College of Environmental Science & Forestry, Syracuse, New York 13210

the politics of recycling

Not only are consumers and secondary-materials industries concerned about recycling. Government officials are too.

On the state level, the Oregon Department of Environmental Quality has set a general goal for its solid waste management staff and regional governments: by 1975, to recycle or find ways to use 25% of the domestic waste thrown away in 1970 and, by 1980, to recycle or put to use 50% of this waste.

There is a State Citizens' Advisory Committee on Solid Waste Management whose membership mirrors the political spectrum of interests in garbage--local government, public works officials, sanitary service collectors, industries which produce much solid waste, environmentalists, recycling industries. An area of difference is whether governments should invest in mechanical garbage sorters which would separate recyclables from trash at a central site--or, whether through ordinances or economic incentives, governments should encourage user-separation of recyclables before garbage collection is made. Meetings of the committee are open to the public, and the members seem receptive to recycling, but they need your encouragement and ideas.

At the regional and county level, solid waste management plans are being prepared for DEQ approval and coordination. In early 1973 public meetings during regional solid waste programs will give you a chance to express your ideas and concerns about recycling.

City and County governments hold the reins over recycling's future too. Zoning laws, garbage collection franchises, nuisance ordinances, fire and sign codes all affect recycling projects. Look into local regulations with an eye to how they might affect recycling and work with officials to insure that recyclers are encouraged.

The 1973 Oregon Legislature may consider bills covering such issues as the 1975 closure of Portland's only landfill, challenges to the Bottle Bill, and recycling tax incentives. Write or call your legislators and ask their views on recycling, voice yours, and follow solid waste legislation.

Influence public opinion by telling your friends about recycling and distributing ORION literature and posters. Call 222-3952 for more information.

WHAT IS ORION?

ORION (Oregon Recycling Information and Organizing Network) is a federally funded environmental education project of the Oregon Environmental Council. It aims to popularize recycling throughout the state and make recycling easier and more effective for both the householder and the recycling project organizer. We have found that people are eager for information on what, where, and how to recycle their garbage and that they understand recycling's importance as a means of saving valuable resources and of reducing our growing piles of wasted garbage.

ORION functions as a communications center for the recycling movement--

through the Recycling Switchboard, we answer questions from the public about local recycling opportunities

through the ORION Bulletin, we share our information and ideas with organizers of recycling projects

through fact sheets, brochures, radio and TV spots, posters and press releases, we encourage the practice of recycling and spread information about specific recycling issues

through meetings with recycling project organizers, visits to recycling industries, and conferences with solid waste officials, we work to give recycling a greater environmental, political and financial impact in Oregon.

WHAT IS THE OREGON ENVIRONMENTAL COUNCIL?

The OEC is a statewide coalition of people and organizations concerned about the environment. The OEC is an action organization. For example, in the field of solid waste, it (1) designed and lobbied for the Oregon Bottle Bill, (2) has a member on the DEQ's Solid Waste Citizens' Advisory Committee, and (3) is responsible for the Recycling Switchboard and ORION.

The OEC is active in the fields of city planning, wilderness and wildlife preservation, air and water quality, energy sources and consumption, environmental education, and natural resources.

Membership in the OEC is open to individuals, families, and non-profit organizations with an interest in conservation.

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